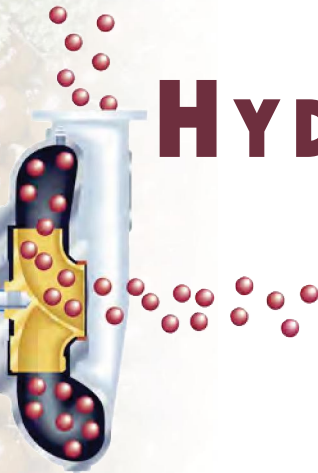


CORNELL PUMP COMPANY

Food Process Pumps



HYDRO-TRANSPORT FOOD PUMPS



EFFICIENCY

In addition to a dependable pump system, today's food process systems must also be efficient and economical. As energy costs rise, conservation and efficient operation become critical issues for end-users striving to minimize expenses associated with energy consumption. Cornell pumps maintain superb hydraulic operating efficiencies and are coupled with energy efficient motors. The bottom line – Cornell pumps cost less to operate.



Cornell Engineers understand the important role food handling pumps play in today's marketplace. Our innovative single port impeller configuration with unique offset volute* provides the end user with a food handling pump capable of transporting even the most delicate food products.

At Cornell, we've built our worldwide reputation on quality and reliability. Our centrifugal pumps are engineered and manufactured to provide continuous and trouble-free operation. As a matter of fact, many Cornell pumps sold in the 50's are still providing the same continuous and dependable service they did the day they were installed. No one is more committed to making your ownership a truly rewarding experience than Cornell.

Innovation

Many Cornell innovations have evolved from our commitment to the food processing marketplace and an ongoing effort to work with the industry in providing solutions for food handling applications.

Performance Focused Pump Design

Cornell's distinctive pump design allows food to pass through the pump and exit through the center of the discharge nozzle while minimizing contact with any pump surface. The single port impeller, a proven feature consisting of a large and rounded leading edge vane, was designed specifically for handling whole or processed foods. Together, these features significantly reduce product damage and abrasion, thus insuring product integrity.

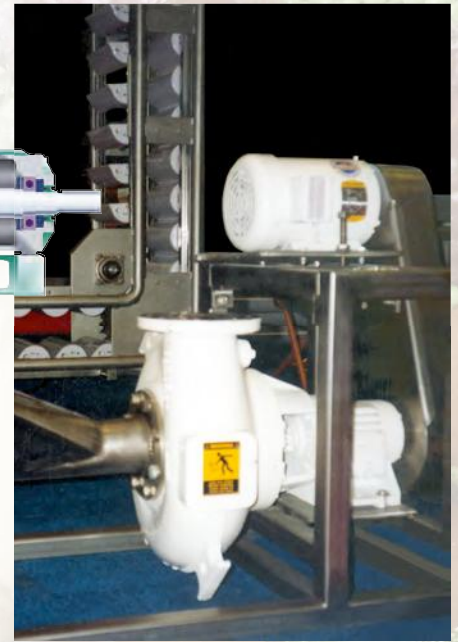
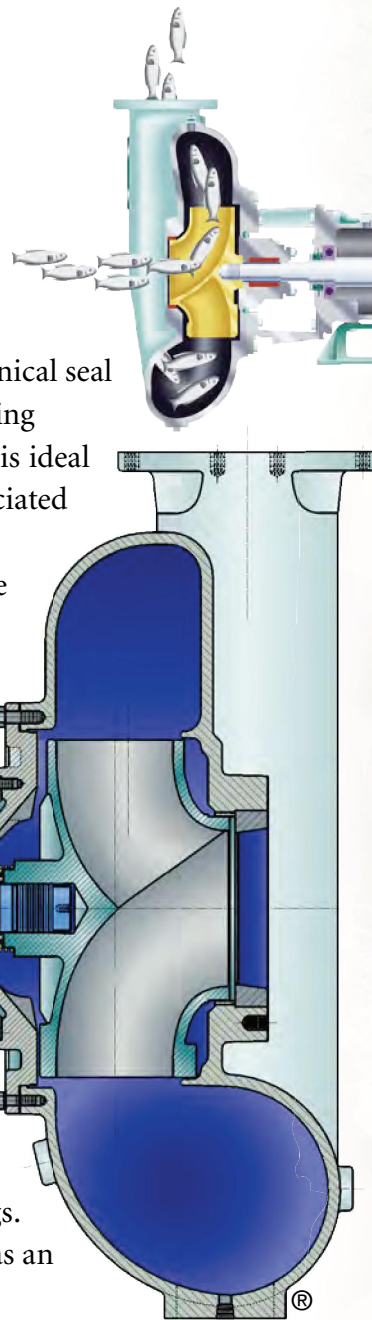
* Cornell offset volute configuration is registered in the U.S. Patent and Trademark Office.

Cycloseal®

The Cycloseal® is a self-contained single mechanical seal upgrade for the standardized food grade packing feature. It requires no external flushing which is ideal for eliminating the water usage normally associated with mechanical seals. The Cycloseal® uses stationary 'vanes' cast into the pump backplate to create pressure gradients that move solids away from the seal faces. As a result, the requirement for an external water flush line for abrasive service is avoided. The Cycloseal® design is available in all food handling pumps.

Quality Materials

Cornell's food handling pumps are available in all iron, all stainless steel or all iron with stainless steel impeller. Standard features include: dual-plane and dynamically balanced impellers, heavy-duty shafts with replaceable shaft sleeves and replaceable suction wear rings. Other materials of construction are available as an option for abrasive or caustic applications.

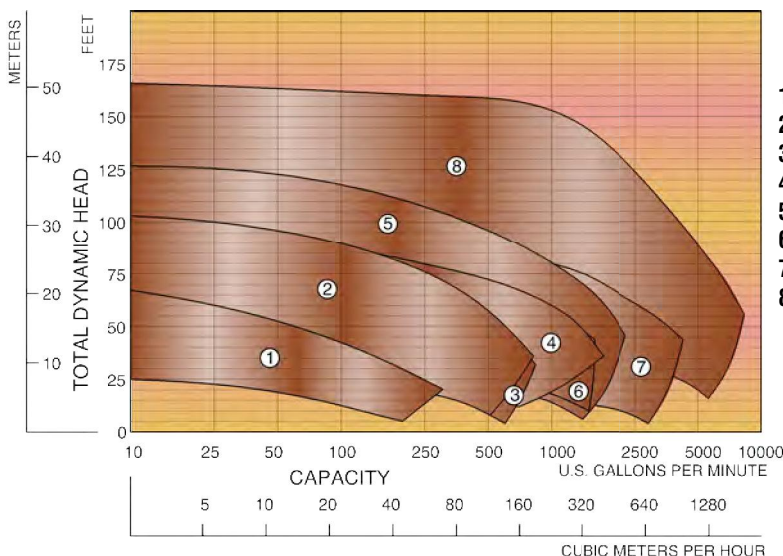


QUALITY ASSURANCE

Cornell Pump Company proudly maintains its ISO 9001:2000 certification which validates that Cornell is in compliance with all necessary processes to meet customer requirements.

The elements associated with ISO 9001:2000 certification include such areas as contract review, design and development, production, purchasing, quality control and service.

Hydro-transport Food Pumps



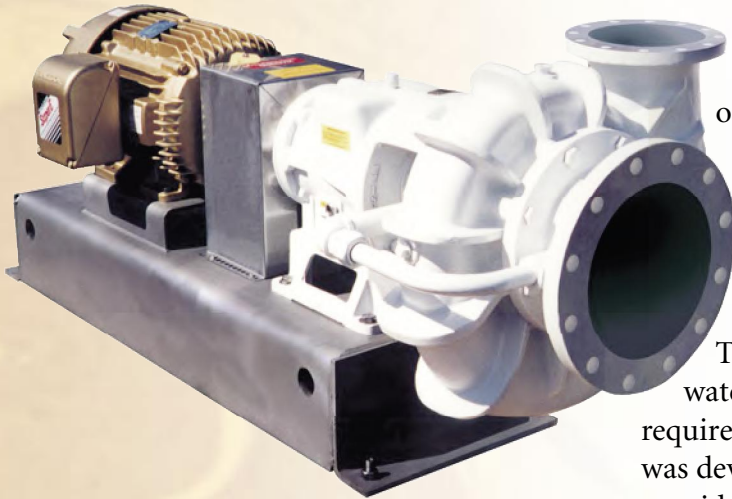
1. 3NLP
2. 4NMP
3. 4NMPP
4. 6NHP
5. 6NHPP
6. 8NHPP
7. 10NHPP
8. 12NHPP



HOT COOKING OIL



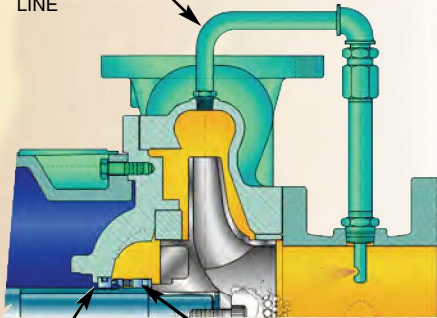
Enhanced vapor handling and improved sealing technology are central to Cornell's latest hot cooking oil pump innovations. When fresh product passes through a fryer, water tends to travel along the bottom of the fryer in a liquid phase at 392°F (200°C), until it reaches the pump suction where the action of the impeller breaks up the water into smaller droplets that flash into steam. Ordinarily, entrained steam would impair the pump's head and flow, but Cornell's innovative anti-cavitation system prevents this situation.



Mechanical Shaft Seal

The metal bellows mechanical shaft seal, with an optional water-cooled seat, can be used where temperature requirements reach up to 750° F. This proven shaft sealing method was developed over many years of field testing and is optimized to provide food processors with the most reliable and cost effective seal system in the marketplace. The metal bellows seal provides superior performance in extreme temperature processing services. The bellows leaf construction offers greater metal dependability and more uniform bellows compression.

VAPOR SUPPRESSION LINE



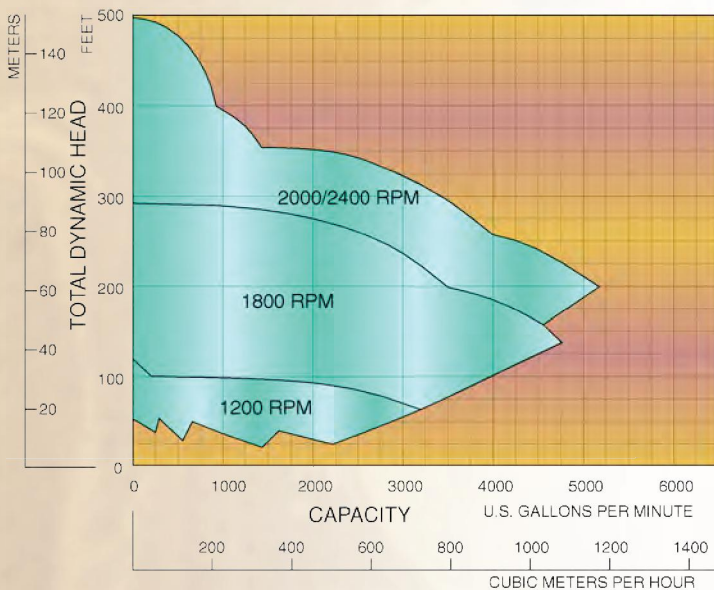
OPTIONAL SEGMENTED BUSHING FOR STEAM QUENCH SYSTEMS.

SEAL IS ELASTOMERIC OR METAL BELLOWS TYPE - OPERATES UP TO 750° F (398° C). (Standard construction runs up to 400° F (204° C)).

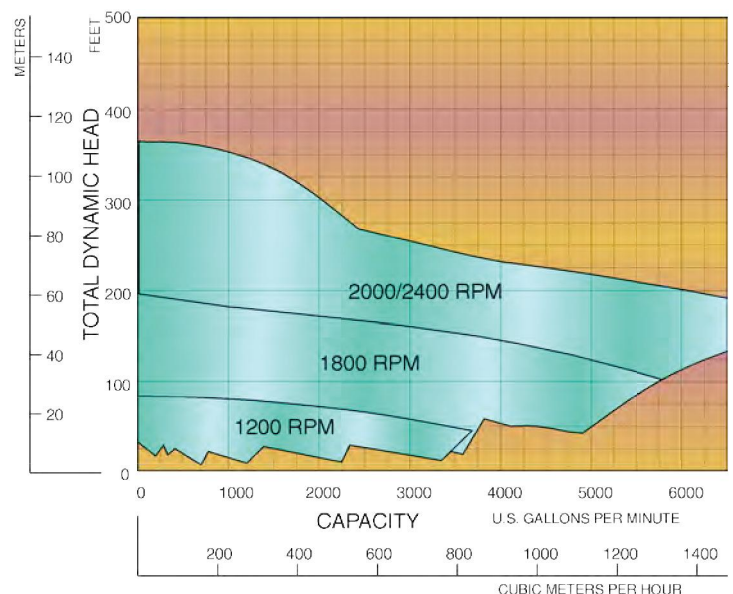
Hot Cycloseal®

The 'Hot Cycloseal®' combines the high temperature capability of the metal bellows seal with the optimized operating environment of the Cycloseal® system. The 'Hot Cycloseal®' system prevents accumulation of solids and vapor near the seal faces and eliminates hot spots by maximizing cooling flow around the seal.

H-Series



R-Series



CLEAR LIQUID PROCESS

Energy Efficiency

Cornell Pumps are designed to deliver *best in class efficiency*. Depending on operating hours, fuelant, and horsepower required, you can save \$3,000 per year (or more) in energy costs. Cornell manufactures *more than 60 clear liquid and non-clog pumps* that meet or exceed optimum efficiency standards for centrifugal pumps.

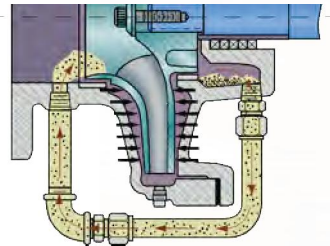
Select High Efficiency Pump Models:

- 8H – 88% efficient
- 6RB – 89% efficient
- 5RB – 8 % efficient
- 4RB – 85% efficient



External Hydraulic Balance Line

Cornell's external hydraulic balance line equalizes pressure between the impeller hub area and the pump suction to reduce axial loading acting on the impeller, shaft and bearings. The balance line also assists in moving sand and silt from the stuffing box to the low pressure area at the pump suction, reducing wear of the wetted parts.



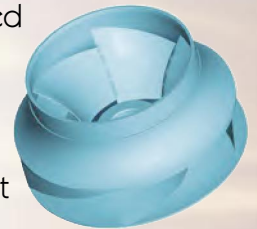
Materials of Construction

All Cornell process pumps are constructed with top quality materials. Our pumps are cast iron, bronze fitted or all iron construction. Standard features include balanced impellers, heavy-duty shafts, replaceable shaft sleeves, and replaceable wear rings. Optional materials are available for abrasive or caustic applications.

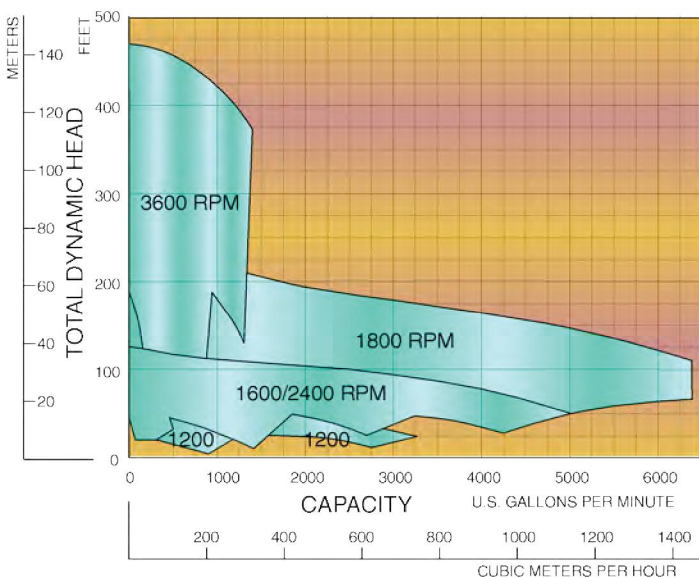


RESEARCH & DEVELOPMENT

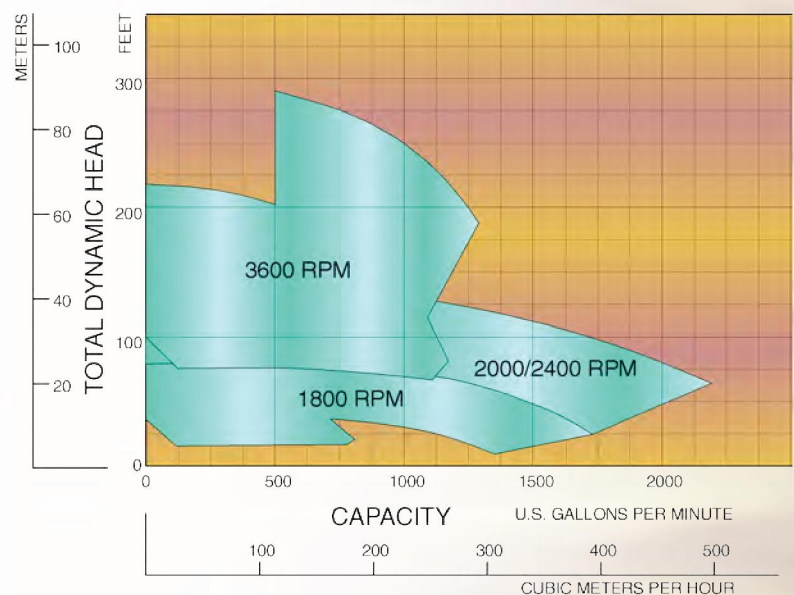
Cornell Pump Company is known for its innovative designs at the leading edge of technology. We are constantly striving to improve and expand our range of highly engineered products using solid engineering practices plus aggressive research and development to maintain leadership in the food processing marketplace. Many unique and innovative 'firsts' have resulted from Cornell's willingness and ability to adapt to changing market requirements.



Y-Series



W-Series



WASTE WATER



MANUFACTURING

Cornell pumps are of superior quality, with each part machined and built to our exacting standards.

Our team of exceptional machinists, craftsmen and assembly mechanics work with some of the most modern manufacturing machinery and hydraulic testing equipment in the world to bring our customers a state-of-the-art product.

Cornell's water and waste water pumps are frequently used in starch recovery, water return, circulation, chilled water, food product waste and other water and waste water applications.

Solids Handling Pumps

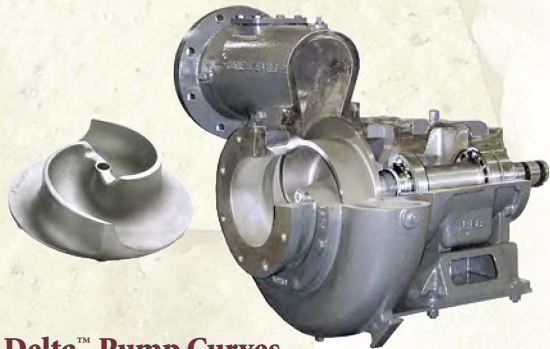
With flow rates exceeding 38,000 gpm and heads to 470 ft TDH, Cornell is the industry leader for heavy-duty, efficient, low maintenance pumps. Cornell has incorporated many unique and innovative design features into our waste water line. These pumps are specifically designed to handle abrasive solids and large diameter materials in a multitude of waste water applications.

Chopper Pumps

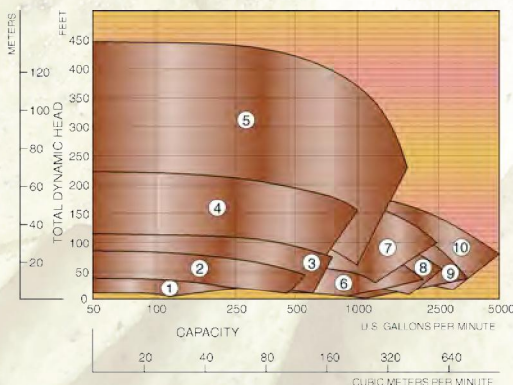
Cornell Chopper pumps, constructed of ductile iron with replaceable cutter bars of T1 tool steel (heat treated to a minimum 60 Rockwell C hardness), are ideally suited for chopping solids. Standard construction includes a heat treated cast alloy steel impeller (min. 60 Rockwell hardness) and stainless steel shaft sleeve. Back-to-back angular contact ball thrust bearings and single ball radial bearings make for smooth operation. Each Chopper pump is fitted with a John Crane type 2 tungsten carbide mechanical seal. TDH ranges from 30 to 200 feet with flows ranging from 0-1500 GPM. The pumps are available in 4 and 6 inch discharges sizes.

Delta™ Style Pumps

Cornell's Delta™ style pump is designed to handle rags and stringy material. Two distinct vortices are created by the impeller which pass solids through the pump. The absence of sharp impeller edges prevents "hair pinning" or hang-up of stringy materials. Larger solids are effectively broken up by the comminuting action of the impeller vanes. Many of our enclosed impeller type pumps can be retrofitted with Delta™ style impellers.

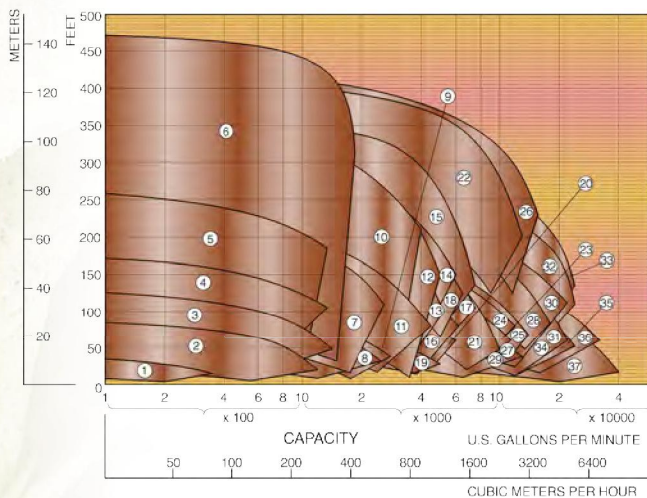


Delta™ Pump Curves



- | | | |
|----------|----------|------------|
| 1. 3NLA | 5. 4NHM | 9. 8NNDH |
| 2. 4NLDL | 6. 6NHDH | 10. 10NNDH |
| 3. 4NNDH | 7. 6NHM | |
| 4. 4NHDH | 8. 6NNDH | |

Enclosed Impeller Pump Curves

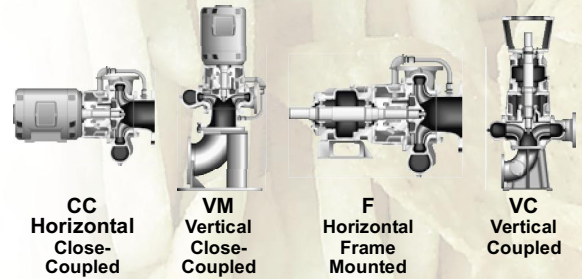


- | | |
|-------------|-------------|
| 1. 3NLT | 20. 12NHTM |
| 2. 4NNTL | 21. 12NHF |
| 3. 4NNT | 22. 12NHG28 |
| 4. 4NHTA | 23. 14NHG |
| 5. 4414T | 24. 14NHGA |
| 6. 4NHTB | 25. 14NHGH |
| 7. 6NHTA | 26. 14NHG28 |
| 8. 6NNT | 27. 16NHGH |
| 9. 6NHT/TH | 28. 16NHG22 |
| 10. 6NHTB | 29. 16NHG32 |
| 11. 8NNT | 30. 18NHG |
| 12. 8NHTA | 31. 18NHFL |
| 13. 8NHTH | 32. 18NHG34 |
| 14. 8NHTR | 33. 18NHG34 |
| 15. 8NHGA | 34. 20NHFL |
| 16. 10NHTB | 35. 20NHG |
| 17. 10NHTBH | 36. 24NHG |
| 18. 10NHTA | 37. 30NNT |
| 19. 12NHTL | |

AVAILABLE OPTIONS

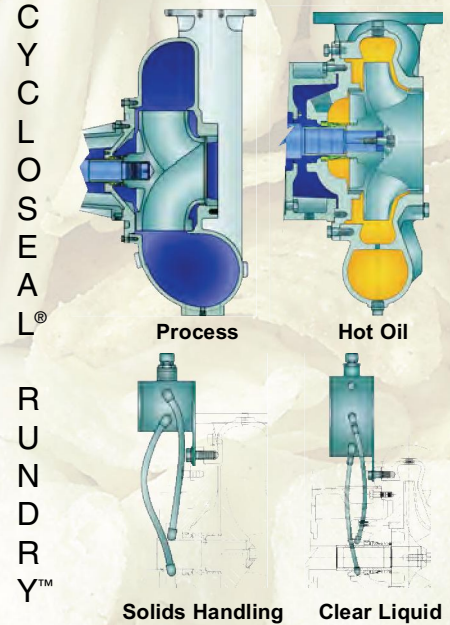
Mounting Configurations

Cornell's Modular Frame design allows for easy adaptability. Choose a pump, then pick the mounting configuration best suited to your application. Right hand and left hand rotation along with tangential or centerline discharges are available for most pumps.



Cycloseal®

Cornell's Cycloseal® (U.S. Patent #5,489,187) lasts many times longer than a typical mechanical seal. This saves on the installed cost of a seal water system and its on-going maintenance not to mention the savings of thousands of gallons of seal water over the life of the pump. No seal flush, no vent line and no lubrication is required for this seal. The Cycloseal® design is available in all waste handling pumps and many clear liquid pumps.



Run-Dry™/Quench Option

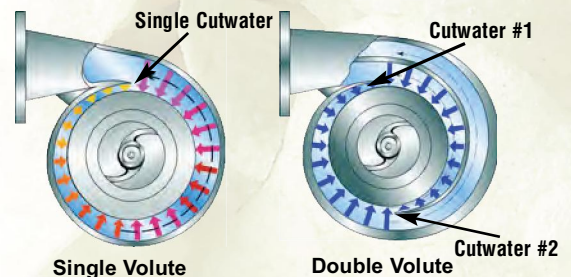
A great feature for protecting your mechanical seal. Allows your pump to run dry without the use of expensive water systems and without mechanical seal damage.

Material Options

Cast iron, Ductile Iron, Heat-Treated Ductile Iron, Bronze, Navy Bronze, various Stainless Steel grades including Duplex and Super Duplex Stainless Steel, and other materials are available to meet your application needs.

Double Volute Design

The double volute system enables Cornell single-stage, end-suction centrifugal pumps to easily perform big volume and high pressure jobs. On single volute pumps, the increasing pressure acts against the impeller area and creates unbalanced radial forces. By contrast, the Double Volute System effectively balances these forces around the impeller to reduce shaft flexure and fatigue for longer seal life, bearing life and shaft life.



PUTTING IDEAS TO THE TEST

Test Lab

Cornell's test lab is the proving ground for all of our pumps where our goal is to engineer and manufacture the best performing, most efficient pumps on the market. Test Lab technicians, under the supervision of Registered Professional Engineers, perform research and development as well as conduct certified performance, NPSH, and vibration testing.

The focal point of the test lab is an 80,000 gallon open loop testing system with calibrated flow meters from 2.5" through 20" in size. In our closed loop testing system, with flow meters up to 36" diameter, we can test pumps up to 60,000 gallons per minute.

The test lab is also equipped with an 800 HP VFD and multiple transformers to test motors with voltages ranging anywhere from 120 to 4160 volts. For motor sizes above 800 HP we use a portable generator.

